

## RIVERS AND FLOODS, NOVEMBER, 1919.

ALFRED J. HENRY. Meteorologist in charge.

[Dated Dec. 29, 1919.]

Flood producing rains fell throughout the Ohio Valley and thence southwestward to Louisiana and northeast Texas on the last few days of October and again on November 1. Small floods occurred in the upper Trinity, the Sulphur, and Cypress Rivers of northeast Texas. At Liberty, Tex., on the Lower Trinity, the river was in flood the entire month, possibly by reason of the small slope between that point and the waters of Trinity Bay. The Sabine River was also in flood during a portion of the month. There were also slight floods in the small streams of Arkansas, West Virginia, Ohio and Indiana during the first decade of the month.

On the 10th, 11th, and 12th a general rainstorm passed northeastward from the Gulf States to the Lake region over substantially the same districts as on the first of the month. The resulting floods were not serious although the rivers carried more water than usual for this time of the year. Wide spread rains fell on the 25th and 26th and again on the 28th and 29th causing moderate floods in the smaller rivers of Arkansas, northeast Texas, upper Ohio Valley and Kentucky. The Ohio itself did not reach flood stage during the month except in the stretch between Evansville, Ind., and Shawneetown, Ill. After remaining in flood for about a week, the river slowly declined.

The significance of the November floods lies in the fact that the flow of the Mississippi has been materially increased over the average for November. The lower river at this writing (Dec. 29) is but 1.6 feet below flood stage at Vicksburg, Miss., and 2.1 feet below at New Orleans. High water in the Memphis district is described in the paragraph below:

## HIGH WATER IN THE MEMPHIS DISTRICT, NOVEMBER, 1919,

S. C. EMERY, METEOROLOGIST.

The river stages in the Memphis district during November, 1919, were the highest on record for that month, the maximum stage at Memphis 30.1 feet, exceeded the previous high November stage of 1906, by 0.8 foot. The rise at Memphis began on September 24th, continued throughout the month of October, and reached its maximum 30.1 feet, on November 13 at Helena, Ark., the rise followed closely the Memphis gage, and reached its maximum 37.6 on November 16. While the Mississippi River nowhere reached the flood stage, there was a considerable portion of the low, unprotected land on both sides of the river considerably flooded, making it impossible to gather cotton and corn that was still in the fields, owing to the continued rains throughout October delaying such work. Much of these crops were more or less damaged and some even destroyed by being exposed to the rains and high winds. Also work on levee construction and other river improvement was entirely suspended throughout the month and contractors were forced to move their plants to high ground back of the levee. This caused a severe loss both to the contractor and employees, but the amount of this loss can not well be estimated. The rise in the St. Francis River began early October and continued steadily through November, reaching the flood stage 17.1 feet on the 30th of the month, remaining at that stage but two days. The flooding of this river and the surrounding country was due directly to unusually heavy local rains from the 25th to 29th of November. Crops still in the fields were much damaged and as water is still present on many farms a still further damage is expected.

Daily rains, 1st to 4th, inclusive, in Washington and Oregon caused the streams of those States to pass above flood stage on the 4th. The greatest loss sustained was to logs which broke from their moorings in the various streams and passed down stream beyond recovery. Railroad traffic was only slightly interrupted.

## LOSS BY FLOOD—NOVEMBER, 1919.

The loss of corn that had not been gathered was heavy as in the preceding month. The total loss in the lower Ohio—Evansville, Mo., district, is estimated at \$3,000,000. Heavy rains in Arizona on the 26th and 27th caused a sharp rise in the Hassayampa, Augua Fria, Verde and Salt Rivers on the 27th. Damages to bridges and approaches thereto in Arizona by this rise is placed at \$142,000.

River.	Bridges, highways, etc.	Crops.		Live stock	Suspension of business.	Value of warnings.
		Matured.	Prospective.			
Trinity, (Tex.).....	\$32,000	\$33,000	\$19,500	\$2,500	\$2,500	\$77,000
Black (Ark.).....		150,000				
Petit Jean (Ark.).....		12,000				
Ohio (Cairo dist.).....		140,000				140,000
Duck (Tenn.).....		300,000				
Pearl (La.).....					5,000	2,000
White (Ind.).....	100,000	300,000	250,000			
Total.....	132,000	955,000	269,500	2,500	7,500	219,000

TABLE I.—Flood stages in the Atlantic, east Gulf, west Gulf, and Pacific drainage areas during month of November, 1919.

Drainage, river, and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From	To	Stage.	Date.
<i>Atlantic drainage:</i>					
Delaware, East branch, Fish's Eddy, N. Y.....	Feet. 10	27	27	Feet. 10.8	27
<i>East Gulf drainage:</i>					
Chickasawhay, Shubuta, Miss.....	27	12	12	27.7	12
West Pearl, Pearl River, La.....	13	16	18	13.5	17
<i>West Gulf drainage:</i>					
Trinity—					
Fort Worth, Tex.....	20	(**)	1	24.8	1
Dallas, Tex.....	25	(**)	5	35.5	3
Do.....	25	29	(*)	34.2	30
Trinidad, Tex.....	28	(**)	17	38.0	†31.1
Liberty, Tex.....	25	(**)	(*)	28.2	30
<i>Pacific drainage:</i>					
Chickamas, South Fork, Oreg.....	12	4	4	14.0	4
Willamette—					
Eugene, Oreg.....	10	4	5	11.5	4
Oregon City, Oreg.....	10	6	7	10.8	6
Santiam, Jefferson, Oreg.....	10	4	5	15.0	4
<i>Mississippi drainage, Ohio basin:</i>					
Kiskiminetas, Saltsburg, Pa.....	8	27	27	9	27
Monongahela—					
Greensboro, Pa.....	20	26	27	22.1	26
Lock No. 4, Pa.....	31	27	27	32.9	27
Little Kanawha, Glenville, W. Va.....	22	2	2	22.8	2
Hocking, Athens, Ohio.....	17	27	28	19.1	28
Scioto, Circleville, Ohio.....	7	2	3	8.5	3
Licking, Falmouth, Ky.....	7	27	28	9.3	28
Ohio—					
Evansville, Ind.....	35	6	11	38.2	8
Henderson, Ky.....	33	6	11	35.8	9
Mount Vernon, Ind.....	35	7	12	37.4	9, 10
Shawneetown, Ill.....	35	7	13	38.8	10, 11
<i>Green—</i>					
Lock No. 6, Brownsville, Ky.....	30	29	(*)	30.1	30
Lock No. 4, Woodbury, Ky.....	33	2	5	37.0	4
Do.....	23	28	(*)	39.8	30
Lock No. 2, Rumsey, Ky.....	34	6	9	35.3	8
Do.....	34	30	(*)	34.3	30
<i>Walash—</i>					
Mount Carmel, Ill.....	15	(**)	12	20.8	7
Lafayette, Ind.....	11			15.0	2
White, Decker, Ind.....	18			21.1	7, 8
<i>Mississippi drainage, northern and western tributaries:</i>					
Wisconsin, Knowlton, Wis.....	12	12	12	12.6	12
Osage, Tusculumbia, Mo.....	25	(**)	3	33.8	†30

\* Continued into December.

\*\* Continued from October.

† October.